



Broodmares Grazing Tall Fescue Pastures or Fed Tall Fescue Hay Require Careful Management and Close Observation

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Tall Fescue (*Festuca arundinacea*) is a hardy grass that is easily established, tolerates close grazing, stands up to heavy horse traffic, and survives drought conditions that wither other grasses. Fescue is resistant to insects, disease and weed competition. It has a long growing season, starting early in the spring and lasting until late in the fall, and is known as the most important cool season grass in the United States.

Where can you get this "wonder grass"? If you are in Virginia and have an old established pasture, you probably already have it. You also probably have an endophyte infection in your stand of tall fescue. Will this endophyte infection harm your horses? It is difficult to predict, but the more you know about tall fescue, the better you will be able to avoid its potentially devastating effects on broodmares and newborn foals.

Fescue Related Problems

Documented cases of fescue related toxicity have included some of the following common problems:

- Abortions may occur around the time the mare would be expected to foal. Mares may carry foals for 30 to 40 days longer than normal. During the **prolonged gestation**, the foals continue to grow and the birth is often difficult because of the size of the foal. Foals may die during a **difficult birth** associated with the large size of the foal.
- **Thickened placentas** are often seen in mares grazing fescue. Mares may **retain the placenta** longer than normal, leading to infection, **laminitis (founder)**, and **difficult rebreeding**.
- The most common problem of mares on fescue is that they **produce little or no milk (agalactia)** and the production of colostrum can be decreased.
- The mare may **not exhibit the typical signs of foaling**, including development of the udder, relaxation of the muscles around the tail, and filling out of the teats.
- Research on the effects of fescue toxicity on young growing horses has been inconsistent, with some workers reporting reduced growth of yearlings and others reporting no effect on growing horses.

The Toxic Principle

The toxic agent in fescue is associated with an endophyte fungus. The fungus lives between the plant cells and either produces a chemical or causes the fescue to produce a chemical which scientists believe to be an alkaloid toxin. Three groups of alkaloids; **diaziphenanthrene**, **pyrrolizidine**, and **ergot** are found in endophyte infected fescue. The ergot alkaloids produced by *Acremonium coenophialun* are thought to cause the toxin responsible for poor performance. Exactly what triggers the production of this toxin has not been determined; however, the fungus is known to be seed borne and cannot be spread any other way. Most fescue pastures are infected with the endophyte to varying degrees. Typically, infections may range from 10 to 100 percent of the fescue pasture. Problems have been reported on farms with infections across the entire range. Cutting the grass for hay does not destroy the endophyte or reduce the alkaloid content or effect. The fungus lives within the plant and cannot be detected visually; however, you can test fescue for the level of endophyte infection.

For testing information contact:
Fescue Toxicity Diagnostic Center
Department of Botany
Plant Pathology and Microbiology
Auburn University, Alabama 36849

Fescue Endophyte Testing Service
Plant Industry Division, Seed Section
North Carolina Department of Agriculture
PO Box 27647
Raleigh, NC 27611
Phone 919/733-3930

While the mechanism that causes the reproductive problems is not absolutely known, research indicates that an alkaloid resulting from the endophyte infection causes an excess production of a neuro-active chemical, dopamine. Excess dopamine has a suppressing effect on the reproductive hormone, prolactin. Prolactin is essential to the final stages of pregnancy and birth. Without the prolactin signal, the mare's body does not realize it is time to foal.

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Does this powerful alkaloid have any other metabolic effects? Research so far does not indicate conclusively any other negative effects, although some evidence exists for possible harmful effects to horses other than broodmares. There have been reports of rough hair coats and slow hoof growth for growing horses on fescue, but other research suggests there is no effect. Continuing studies on the effects of fescue on horses should provide more answers.

Cattle suffer from a condition known as “summer slump” which is caused by the fescue endophyte. The signs of “summer slump” in cattle include elevated temperature, unthriftiness, sloughing off of the hoof along with the tail and tips of the ears, and a tendency for cattle to stay in the shade or stand in water. Research shows that horses on fescue do not have elevated temperatures, possibly because horses are more efficient sweaters than cattle and can dissipate the heat better.

Management Approaches

There are no easy solutions to the fescue problem for broodmare owners. Current practices for dealing with the problem include the following:

1. If you have a mare that is approaching foaling, take her off fescue pasture or hay immediately and contact your local veterinarian. Monitor udder development and the foaling process. Test to see if you have an endophyte problem.
2. Horse producers with fescue should remove the mares from fescue fields during the last 60-90 days of pregnancy. The mares could be fed a legume hay or some other grass hay and grain on a dry lot or a paddock planted in an alternate cool season grass. This is also the time when the mare will require a slightly higher nutritional level.
3. Eliminating the infected fescue and replanting with another grass such as bluegrass, endophyte-free fescue, or orchard grass may be the best insurance. It will cost approximately \$180.00 per acre to establish an orchard grass - clover pasture, no-till. The best alternative forage to plant depends on the area in which you are located. Contact your local Extension agent for more information (See VCE Publication 418-008, *Horse Pastures in Virginia*). To have an effective kill of the fescue and all the seeds, a smother crop should be planted after the first kill, then the fields should be sprayed again to kill the new fescue before grass is replanted. Because the fungus is seed borne, it is important to try to graze and mow fields so that they do not seed out. Replant the most highly infected fields first, then those new forages can be used for mares approaching the last trimester of gestation. Once an endophyte free pasture is obtained, do not move horses directly from endophyte infected fields to non-infected fields. Dry lotting or stalling the mares for 72 hours will reduce the number of fescue infected seed spread between fields. For information on pasture management, see your local Extension agent.
4. Many producers have tried to dilute the effects of fescue by overseeding with clover and feeding grain. However, a study at Clemson University reported a high rate of foal deaths when mares on fescue pasture were receiving 50 percent of their energy from supplemental feed.
5. The possibility that mares on fescue may not produce colostrum makes it imperative that foals are checked for failure of passive transfer (FPT). Mares only produce the antibody rich colostrum during the first 24-48 hours after foaling. Foals need to get at least 1 liter or 24 ounces of colostrum within 6-12 hours after birth,

since it takes 2-4 months for the foal to begin to make its own antibodies. A mare’s milk can be tested for the antibodies provided by colostrum with a colostrometer (available from Lane Manufacturing, Inc., Denver, Colorado). If the mare has no milk or little milk with little or no colostrum, the foal must have colostrum collected from another mare or a plasma transfusion. **Time is critical.** There are FPT tests that determine if adequate serum immunoglobulin (IgG) levels have been reached in foals. However, they are only accurate 18-24 hours after birth. To guard against FPT, collect colostrum from mares that have normal births and adequate colostrum. Six to eight ounces of colostrum can be collected from a mare and frozen in locking plastic bags. Your veterinarian can provide more information about colostrum “banks” and plasma transfusions. When the colostrum is needed, it should be defrosted slowly in a warm water bath. **Do not use microwave ovens to defrost colostrum; they destroy important antibodies.** These solutions increase the cost of raising horses for many producers, but, if endophyte infections are present, they must be considered.

6. It is also important to be aware of the following natural occurrences in broodmares that may occur regardless of their feed source:

Maiden mares tend to make less milk, gestate longer, have more difficult births, and, in general, may not exhibit the typical signs of foaling.

Mares carrying colts tend to have a longer gestation.

Milk production varies between mares and various breeds.

Mares bred to foal early in the year tend to gestate longer than mares bred to foal later in the year. A record of your mare’s past foaling history will help determine if she is having a normal birth.

Medical Treatments

Clinical studies of mares affected by fescue have taken several different directions. In every case, the status of the work is experimental. Researchers at The University of Missouri have fed 0.3 mg/kg of perphenazine to ponies twice a day at 12 hour intervals with positive results. When these same amounts were fed to horses, they experienced an increased sensitivity to pain, behavioral changes, and signs of colic. Acepromazine has also been used; however, there are questions about side effects on the mare and/or the foal. Thyroid releasing hormone has also shown some positive effects but is only available for investigative purposes.

Clemson University is looking at the drug Domperidone. This drug has been reported to be effective in reversing the effects of fescue’s toxic alkaloid. Clearance for this drug is currently being sought through the FDA.

Summary

The best approach to this problem at this time is to take the mares off endophyte infected fescue pasture and hay at least 60-90 days before foaling. Keeping detailed records on each of your mares’ pregnancies is beneficial since mares tend to repeat the length of gestation and exhibit similar signs of parturition from year to year.

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